REMARKS

This application has been carefully reviewed in light of the Office Action dated December 23, 2003. Claim 32 has been amended. Claim 97 has been added. Claims 32-68 and 97 are now pending. Applicants reserve the right to pursue the original claims and other claims in this and other applications. Applicants respectfully request reconsideration of the above-referenced application in light of the amendments and following remarks.

Claims 32-61 and 64-68 stand rejected under 35 U.S.C. § 102 (e) as being anticipated by Narwankar. The rejection is respectfully traversed.

The claimed invention relates to the method of forming a capacitor structure by annealing the top conducting layer. Annealing the top conducting layer results in a capacitor structure with reduced capacitor current leakage relative to conventionally formed structure (Applicants' specification, pg. 4, lines 18-20). As such, independent claim 32 recites a method of forming a capacitor comprising "forming a bottom conducting layer, wherein said bottom conducting layer forms a bottom electrode; forming a dielectric layer over the bottom conducting layer; forming a top conducting layer over the dielectric layer, wherein said top conducting layer forms a top electrode; and annealing the entire top electrode with an oxidizing gas anneal."

Applicants respectfully submit that Narwankar does not teach annealing the entire top electrode. There is no support in Narwankar, Col. 12, table 1, Col. 10, lines 15-40 or Col. 11, lines 4-50 (as cited in the Office Action, pg. 2) for annealing the entire top electrode. Narwankar discloses that, "[t]he upper oxygen-containing layer 610 and the second upper metal layer 612 together form the upper electrode 615 for the capacitor structure 650." (Col. 11, lines 33-35) (emphasis added).

The Office Action states that "the second upper layer 612 is an entire different upper layer from the top layer 608, 610." (Office Action, pg. 4). This is not true. The second upper layer 612 is a part of the upper electrode 615. Thus, Narwankar's top electrode comprises at least two different conducting layers: layer 610 and 612.

Narwankar's layer 612 is not annealed; thus, Narwankar's entire top electrode is not annealed.

Moreover, Narwankar does not teach that layers 608, 610 are top layer's relative to the dielectric layer 606. As discussed previously, the top layer in Narwankar is layer 612. Further, layer 608 becomes layer 610 after annealing. Layers 608 and 610 are not separate layers as the Office Action contends.

Narwankar discloses forming a first upper metal layer 608 on the insulating layer 606 (Col. 10, lines 61-62). The "first upper metal layer 608 is then treated or annealed in an oxygen-containing environment, resulting in the upper oxygen-containing layer 610, as shown in FIG. 6e." (Col. 11, lines 4-6) (emphasis added). Next, a "second upper metal layer 612 is then deposited onto the upper oxygen containing layer 610." (Col. 11, lines 16-17) (emphasis added). Again, the second upper metal layer is Narwankar's top conducting layer. Thus, Narwankar's entire top electrode is not annealed since the second metal layer 612 is not annealed.

In Applicants' specification, it discloses that "during subsequent wafer fabrication, the dielectric layer develops oxygen vacancies which contribute to capacitor current leakage." (Pg. 3, lines 20-22). Applicants' claimed method "improves the dielectric property of the dielectric layer 36 by adding an oxidizing gas anneal (second anneal) which fills the oxygen voids created in the dielectric layer 36 after the top conducting layer 38 is deposited." (Applicants' specification, pg. 8, lines 8-10) (emphasis added).

In contrast, Narwankar teaches that the second metal layer 612 is deposited after the first metal layer 608 is annealed (which becomes layer 610). Narwankar does not teach that the second metal layer 612 is annealed. Since Narwankar teaches that the top conducting layer, here, metal layer 612, is deposited after the oxidizing anneal, oxygen voids would still be present in the dielectric layer. Thus, Narwankar merely teaches a

conventionally formed top electrode and not Applicants' claimed method of forming the top electrode by annealing the top conducting layer in an oxidizing gas ambient.

For at least the foregoing reasons, claim 32 is allowable over Narwankar. Claims 33-61 and 64-68 depend from claim 32 and are allowable along with claim 32.

Claims 62 and 63 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Narwankar. The rejection is respectfully traversed.

Claim 62 depends from claim 32 and claim 63 depends from claim 62 and are similarly allowable along with claim 32. As set forth above, Narwankar fails to teach or suggest annealing the entire top electrode. Narwankar's top electrode comprises layers 610 and 612. Thus, Narwankar's entire top electrode is not annealed.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

By_____

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